

Skokie River Streambank Stabilization Project



Presented by:

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ESDD

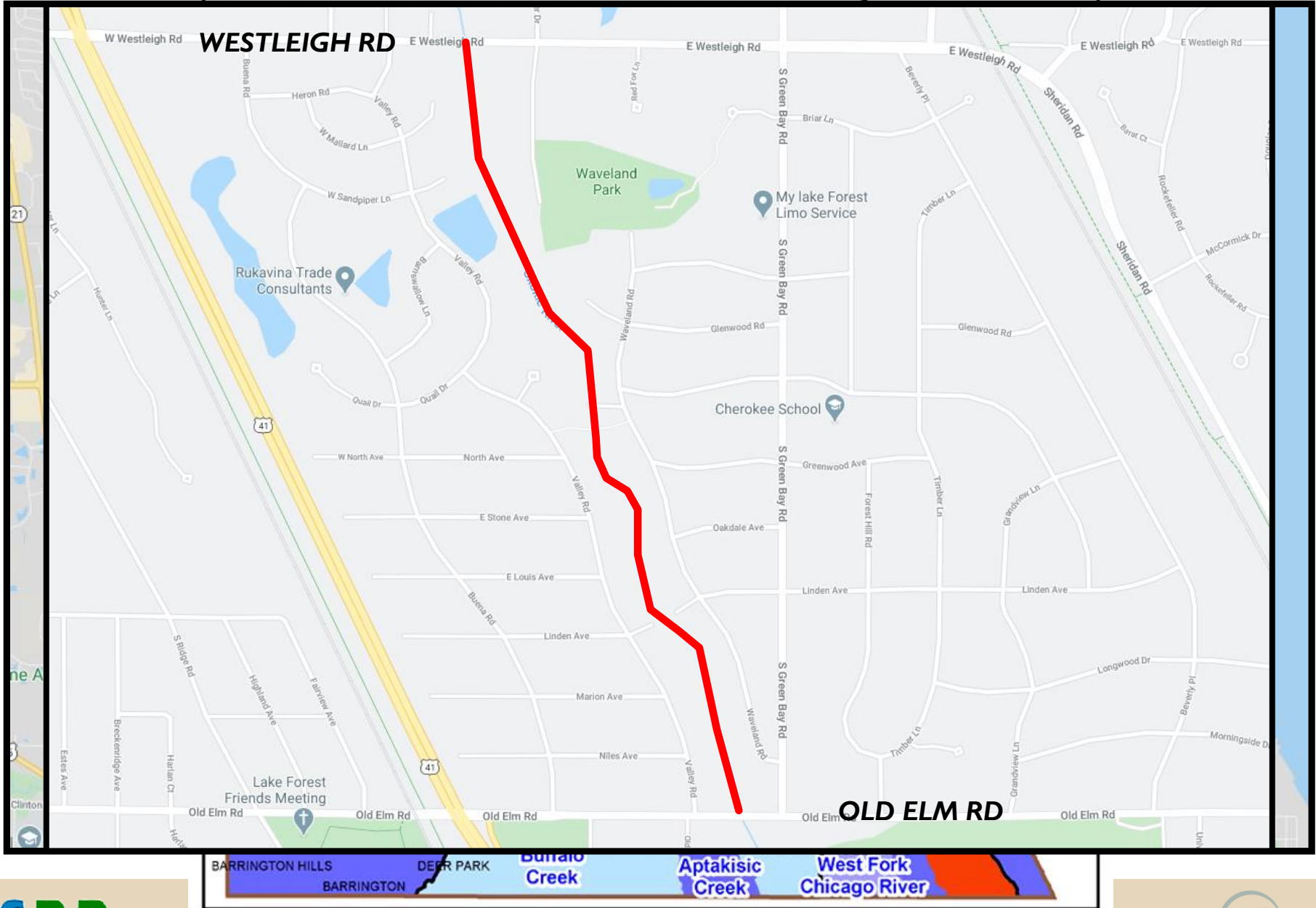
EAST SKOKIE DRAINAGE DISTRICT



Outline

- **Project History and Overview**
 - 2011 – 2014: Streambank Inventories (by Lake County SMC)
 - 2016: Engineer (V3 Companies) Hired for Design and Permitting
 - 2018: Emergency Repair
- **Proposed Final Engineering Design**
- **Project Schedule and Next Steps**
- **Funding Sources**
- **Project Benefits**
- **Questions**

The 26 Subwatersheds in Lake County



Project History and Overview

- **2011 – 2014: Streambank Inventories (by Lake County SMC)**

Skokie River Inventories

2011 Inventory

2012 Fall Inventory

2014 Fall Inventory

Current Stream Conditions

Outfall Testing Locations

The map displays the Skokie River flowing through a suburban landscape. Inventory points are marked along the river: blue dots for 2011, red dots for 2012, and green dots for 2014. Roads labeled include N Waukegan Rd, S Sussex Ln, Melody Rd, N Milwaukee Ave, N Milwaukee Rd, N Waukegan Rd, N Green Bay Rd, W Onwentsia Rd, E Onwentsia Rd, S Poplar Rd, Butler Dr, S Basswood Rd, El Westleigh Rd, Heron Rd, W Sandpiper Ln, S Sandpiper Ln, Buena Rd, S State Hwy, Buena Rd, Linden Ave, Longwood Dr, Crest Ct, University Ave, Hill St, E Old Mill Rd, Center Rd, S Ridge Rd, Hunter Ln, S Sandpiper Ln, Buena Rd, Linden Ave, Longwood Dr, Crest Ct, University Ave, Hill St, E Old Mill Rd, Center Rd. Landmarks include Lake Forest Academy, Melody Farm, Townline Community Park, Lake Forest High School West Campus, Conway Farms Golf Club, St Patrick's Church, Wave Land Park, McCormick Woods Nature Preserve, Fort Sheridan Forest Preserve, Old Elm Golf Club, and Forest College. An inset map shows the location of the study area within Lake County, IL.

LEGEND

OVERVIEW MAP

Lake County IL GIS, USDA FSA, DigitalGlobe, GeoEye, Microsoft, CNES/Airbus DS

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Outfall Testing Locations

Lake County IL GIS, USDA FSA, DigitalGlobe, GeoEye, Microsoft, CNES/Airbus DS ...



Project History and Overview

- **2011 – 2014: Streambank Inventories (by Lake County SMC)**
- **2016: Engineer (V3 Companies) Hired for Design and Permitting**
 - *Performed stream assessment in Fall 2016*
 - *Began design of entire corridor and held several public meetings in 2017*
 - *Permit to US Army Corps and Lake County SMC submitted in early 2018*

Streambank Erosion

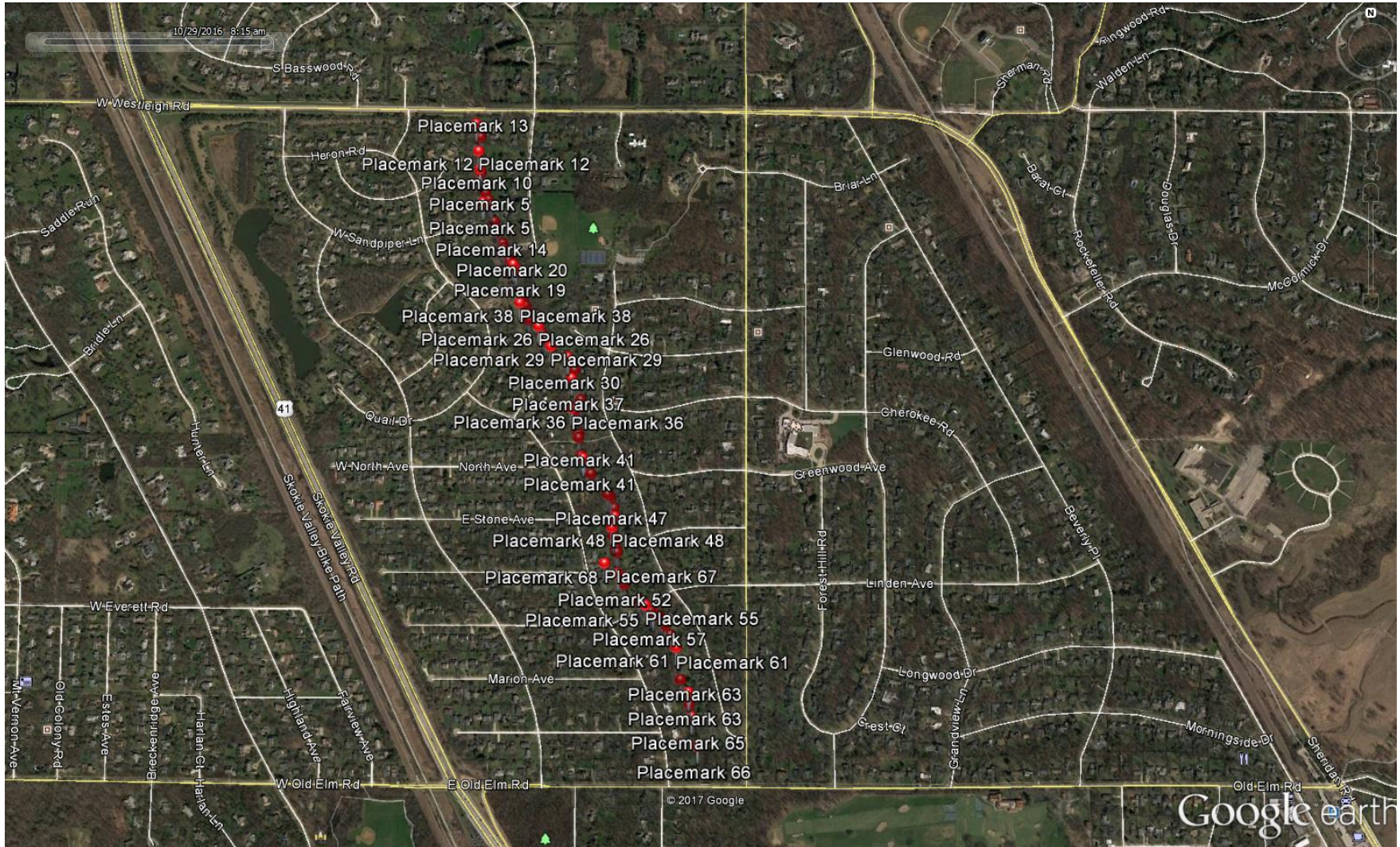


Streambank Erosion – Impacts

- Property Loss (\$\$)
- Loss of trees and vegetation along the river edge (loss of habitat)
- Existing utility poles and storm sewer outfalls are at risk of failure



River Walk Data Collection



Streambank Erosion – Site Examples



Streambank Erosion – Site Examples



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Streambank Erosion – Site Examples



Streambank Erosion – Site Examples



Streambank Erosion – Site Examples



Streambank Erosion – Site Examples



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Streambank Erosion – Site Examples



November 2016



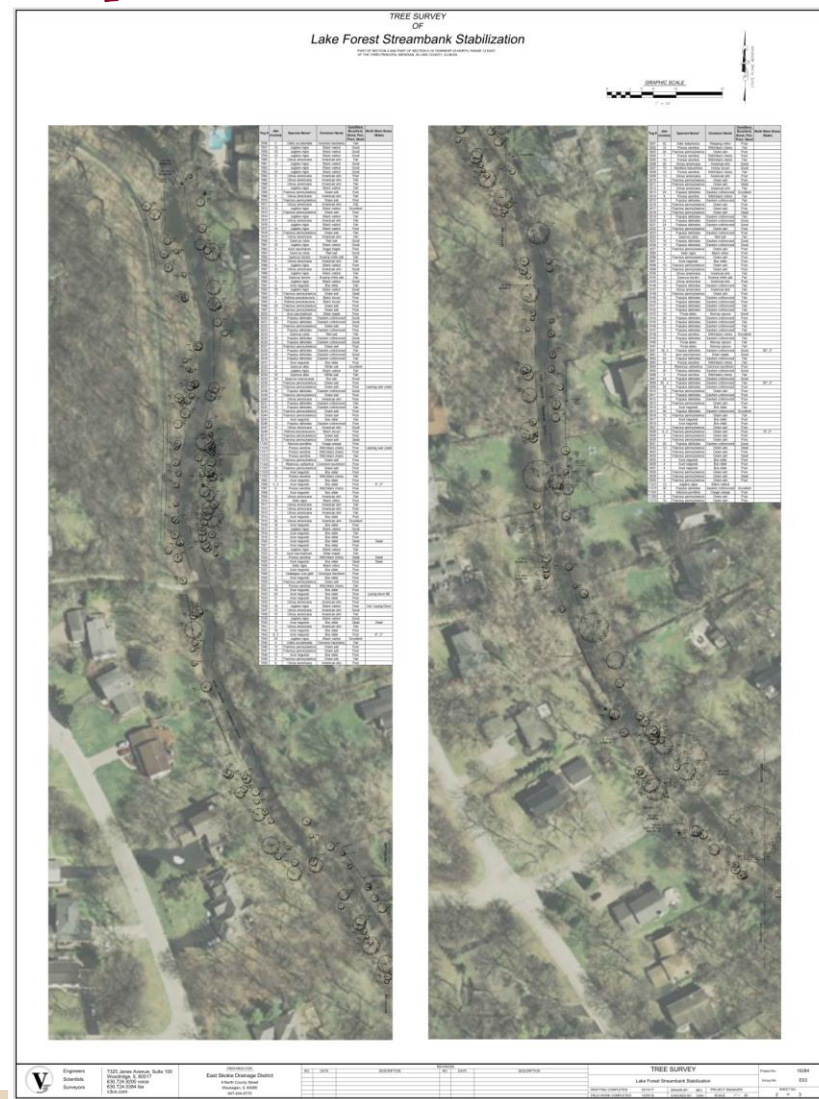
After July 2017 Storm Event

Additional Data Collection




- V3 performed a topographic survey and tree survey and wetland delineation at the end of 2016.
- Tree Survey identified all trees within the river corridor that had the potential of being impacted by the project.
- Wetland Delineation did not identify any sensitive wetlands adjacent to the river.

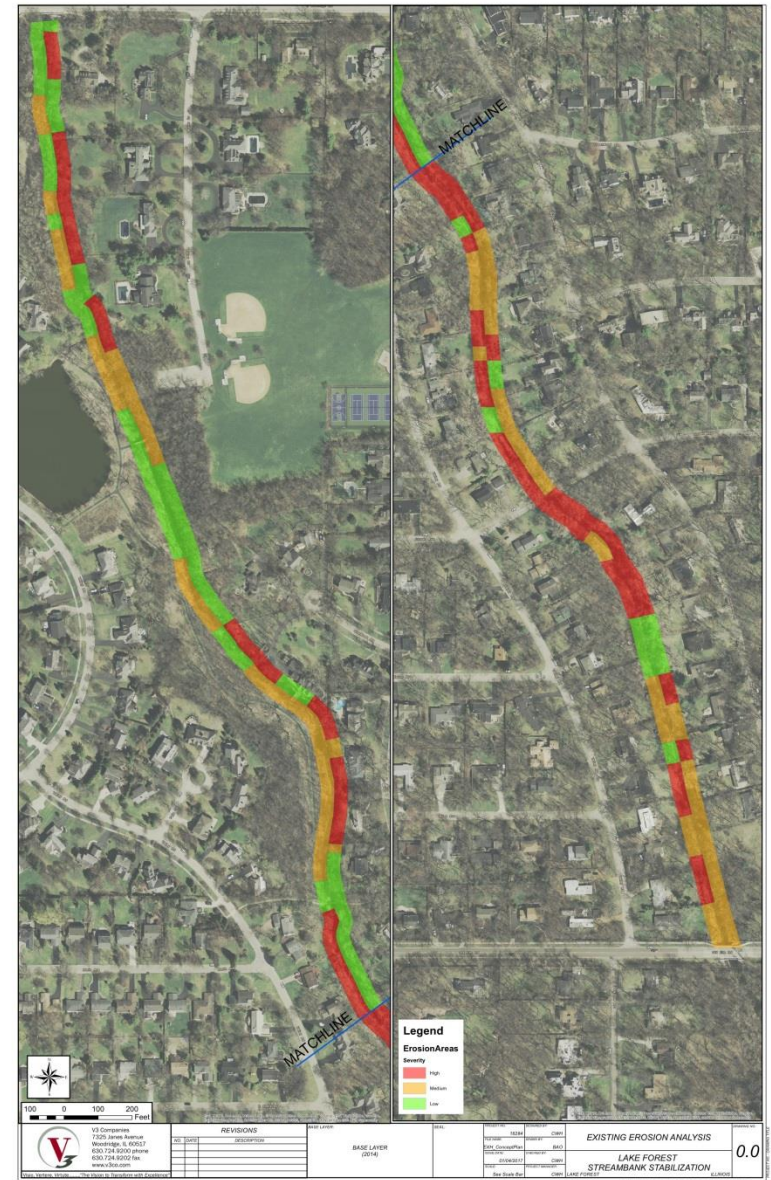
Tree Survey

- Trees were identified based on species, size and condition.
 - 589 Total Trees Identified
 - 23 are Dead (4%)
 - 252 in Poor Condition (43%)
 - 191 in Fair Condition (32%)
 - 123 in Good or Excellent Condition (21%)



Existing Erosion Analysis

- V3 developed an exhibit that identified the existing erosion along the river and categorized it based on severity.
 - Low (Green) 
 - Medium (Orange) 
 - High (Red) 
- This analysis was used as the basis for the conceptual and preliminary bank stabilization designs.



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- **2018: Emergency Repair**
 - **US Army Corps of Engineers Emergency Repair Permit**

Emergency Repair



Emergency Repair



Emergency Repair



Emergency Repair



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 - **US Army Corps of Engineers Emergency Repair Permit**
- **Late 2019 / 2020: Individual Permit issued by US Army Corps of Engineers and Permit Approval from Lake County SMC**

Proposed Final Engineering Design

- V3 evaluated different options for bank stabilization that would be applicable along this river.
- Stabilization practices will vary along the length of the river depending on the severity of the erosion.
 - Toe Protection
 - ❖ Naturalized Toe Protection
 - ❖ Stone Toe Protection
 - Gabion Baskets
 - Soil Lifts
 - Slope Re-shaping / Grading
- All stabilization measures will be re-vegetated when completed.

BANK STABILIZATION MEASURE

Natural Toe Protection

Natural Toe Protection

- *Fallen trees or natural logs can be used to provide an aesthetic toe protection feature.*
- *Size of the logs vary in size depending on the severity and height of the erosion*
- *Only minor grading above the toe protection is needed*
- *Can be used on areas with erosion heights less than 2 feet (due to log size)*
- *Can re-use trunks of trees that are removed as part of the project.*



During Construction



Post Construction with Vegetation

BANK STABILIZATION MEASURE

Stone Toe Protection

Stone Toe Protection

- *Stone will be place on and toed into bank to prevent further erosion of the bank*
- *Only minor grading above the toe protection is needed*
- *Can be used on areas with erosion heights less than 3 feet and high velocity areas*
- *Longer service life than logs*



Stone Toe Protection on Wooded Banks



Post Construction with Vegetation

BANK STABILIZATION MEASURE

GABION BASKETS



During Construction



Walls can be vegetated after construction

Gabion Basket Walls

- Wire Baskets filled with stone.
- Applicable in locations with erosion heights greater than 3 feet
- Can withstand high velocities
- Vines can be planted at top of walls to vegetate the walls.

BANK STABILIZATION MEASURE

SLOPE RE-SHAPING AND GRADING



During Construction



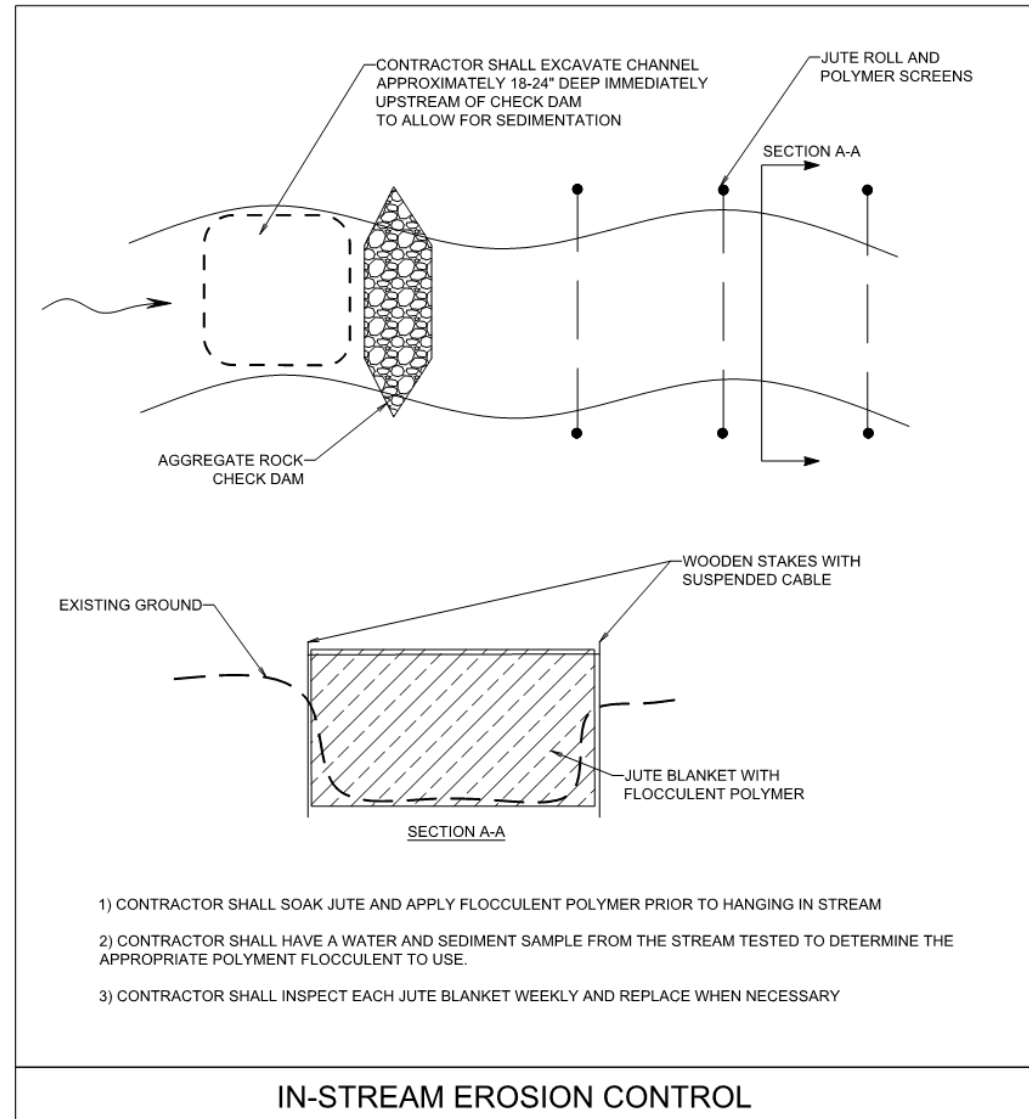
After Construction

Slope Re-shaping and Grading

- Eroded slopes are pulled back to provide a minimum of 3:1 side slopes.
- Slopes are stabilized with native vegetation to hold new bank.
- Minor toe protection is recommended to prevent any toe erosion.
- Requires the most land compared to gabions or soil lifts

Downstream Erosion Control

- Work area will be isolated from normal flows
- Any local dewatering will run through baffle system and/or filter bags prior to re-entering waterway
- In-stream erosion control downstream →





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Project Schedule / Next Steps

- Obtain Easements required for Phase I Construction (current)
- Issue drawings for Bid
- Approve contractor and put together project schedule
- Construction
- Begin planning for Phase 2 Construction

Funding Sources

- **ESDD Annual Assessment**
- **Grants**
 - *Granted IEPA Section 319 Grant through Lake County SMC*
 - *Applied for additional funding through US Fish and Wildlife Service, but was not awarded*

Project Benefits

- **Benefits to Neighboring Homes and Properties**
 - *Project will provide safe and stable banks along the stream corridor. Many homes adjacent to the creek are at risk of losing property, fences and/or other ancillary structures if erosion continues.*
- **Environmental Benefits**
 - *The project will reduce the amount of sediment entering the waterway caused by the ongoing severe erosion.*
 - *Improved water quality by reduction of sediment*
 - *Habitat creation within native plantings along the banks of the channel*



QUESTIONS